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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/526,474

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Koji Tatsumi

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07/15/2008

KANESAKA BERNER AND PARTNERS LLP

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SUITE 310

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EXAMINER

LEWIS, BEN

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/526,474	Applicant(s) TATSUMI ET AL.	
	Examiner Ben Lewis	Art Unit 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 8-10 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 8-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2005 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Detailed Action

1. The Applicant's amendment filed on April 25th, 2008 was received. Claims 1, 9 and 10 were amended. Claims 4-7 were cancelled.

2. The text of those sections of Title 35, U.S.C. code not included in this action can be found in the prior Office Action (issued on November 28th, 2007).

3. The Declaration under 37 CFR 1.132 filed March 25th, 2008 is insufficient to overcome the rejection of claims 1-3 and 8-10 based upon the teachings of Biensan et al. (U.S. Patent No. 6,071,645) as set forth in the last Office action because:
Applicants' experimental data are not commensurate in scope with Applicants' claims. Applicants experiments should compare endpoints of newly claimed range at values immediately adjacent to the endpoints of the newly claimed range.

Examiner also notes that the claimed range of Biensan et al. $0 \leq z \leq 0.3$; $0 < m \leq 0.3$ reads on Applicant's claimed range of $0.002 \leq (c+d) \leq 0.02$; since z and m can be of values less than 0.02 and Applicant has not presented sufficient evidence of a showing of unexpected results for $0.002 \leq (c+d) \leq 0.02$.

Claim Rejections - 35 USC § 102

4. Claims 1-3 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Biensan et al. (U.S. Patent No. 6,071,645)

With respect to claims 1,3 and 10, Biensan et al. disclose a lithium electrode for a rechargeable electrochemical cell (title) wherein, the electrode for a rechargeable lithium cell, contains an electro-chemically active material with general formula $\text{Li}_x \text{M}_y \text{A}_m \text{D}_z \text{O}_t$, $0.8 \leq x \leq 1.2$; $0.8 \leq t \leq 4.2$; $(0.8 - m - z) \leq y \leq (2.2 - m - z)$; $0 \leq z \leq 0.3$; $0 < m \leq 0.3$; where M is at least one transition metal selected from nickel, cobalt, manganese, and iron, A is selected from magnesium and calcium, and D (element B) is at least one element selected from the elements of groups 4b to 5a of the periodic classification. In the formula, Li represents lithium and O is oxygen. The term "element from groups 4b to 5a of the periodic classification" (HANDBOOK of CHEMISTRY and PHYSICS, 46.sup.the Edition) means the elements from Ti, Zr, etc "group IV transition element". . . , to Sb, Bi. D (element B) is preferably at least one metal selected from titanium, zirconium, vanadium, chromium, molybdenum, copper, zinc, cadmium, aluminum, gallium, and tin. Doping elements D substitute for a portion of the transition metal which defines the structure of the material (Col 1 lines 35-67).

With respect to element B being 20% or less, it is noted that $0 \leq z \leq 0.3$, therefore D (element B) can be between 0 and 30 mole %.

With respect to diffraction characteristics, the instant specification recites: a positive electrode for a secondary lithium-ion cell having high cycle durability and high safety in high-voltage and high-capacity applications, which is a particulate positive electrode active material for a secondary lithium-ion cell represented by a general formula, $\text{Li}_a\text{CO}_b\text{A}_c\text{B}_d\text{O}_e\text{F}_f$ (A is Al or Mg, B is a group-IV transition element, $0.90 \leq a \leq 1.10$, $0.97 \leq b \leq 1.00$, $0.0001 \leq c \leq 0.03$, $0.0001 \leq d \leq 0.03$, $1.98 \leq e \leq 2.02$, $0 \leq f \leq 0.02$, and $0.0001 \leq c+d \leq 0.03$), where element A, element B and fluorine are evenly present in the vicinity of the particle surfaces (See Abstract).

Biensan et al. do not disclose any X-ray diffraction data. However, it is the position of the examiner that such properties are inherent, given that Beinsan et al and the present application utilize the same electrode active material comprising the same elements. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to claim 2, Biensan et al. disclose a lithium electrode for a rechargeable electrochemical cell (title) wherein, the electrode for a rechargeable lithium cell, contains an electro-chemically active material with general formula $\text{Li}_x\text{M}_y\text{A}_m\text{D}_z\text{O}_t$, $0.8 \leq x \leq 1.2$; $0.8 \leq t \leq 4.2$; $(0.8-m-z) \leq y \leq (2.2-m-z)$; $0 \leq z \leq 0.3$; $0 < m \leq 0.3$; where M is at least one transition metal selected from nickel, cobalt, manganese, and iron, A is selected from magnesium and calcium, and D (element B) is at least one element selected from the elements of groups 4b to 5a of the periodic classification. In

the formula, Li represents lithium and O is oxygen. Biensan et al. also teach that D (element B) is preferably at least one metal selected from titanium, zirconium, vanadium, chromium, molybdenum, copper, zinc, cadmium, aluminum, gallium, and tin. Doping elements D substitute for a portion of the transition metal which defines the structure of the material (Col 1 lines 35-67).

Claim Rejections - 35 USC § 103

5. With respect to claim 8, Biensan et al disclose a positive electrode active material in paragraph 2 above.

Biensan et al do not specifically disclose the average particle diameter of the positive active material. However Narouka et al. disclose a positive active material for non aqueous electrolyte secondary battery (title) wherein, The positive active material preferably has a mean particle diameter D_{50} of from 4 μm to 25 μm and a BET specific surface area of from 0.2 to 1.5 m^2/g (Paragraph 0026). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same particle size of Narouka et al. for the particle size of the positive electrode active material of Biensan et al. because Narouka et al. teach that by using a lithium-nickel composite oxide having a mean particle diameter D_{50} of from 4 μm to 25 μm as a positive active material, the capacity density can be kept high (Paragraph 0023).

With respect to the particles being formed by coagulation of 10 or more primary particles, Biensan et al. as modified by Narouka et al. do not specifically teach particle

coagulation. However, it is the position of the examiner that such properties are inherent, given that Biensan et al. as modified by Narouka et al. and the present application utilize the same electrode active material comprising the same elements of the same particle size. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Biensan et al. (U.S. Patent No. 6,071,645) in view of Naruoka et al. (U.S. Pub No. 2002/0086210 A1).

With respect to claim 9, Biensan et al. disclose a lithium electrode for a rechargeable electrochemical cell (title) wherein, the electrode for a rechargeable lithium cell, contains an electro-chemically active material with general formula $\text{Li}_x \text{M}_y \text{A}_m \text{D}_z \text{O}_t$, $0.8 \leq x \leq 1.2$; $0.8 \leq t \leq 4.2$; $(0.8 - m - z) \leq y \leq (2.2 - m - z)$; $0 \leq z \leq 0.3$; $0 < m \leq 0.3$; where M is at least one transition metal selected from nickel, cobalt, manganese, and iron, A is selected from magnesium and calcium, and D (element B) is at least one element selected from the elements of groups 4b to 5a of the periodic classification. In the formula, Li represents lithium and O is oxygen. The term "element from groups 4b to 5a of the periodic classification" (HANDBOOK of CHEMISTRY and PHYSICS, 46^{sup}.the Edition) means the elements from Ti, Zr, etc "group IV transition element". . . , to Sb, Bi. D (element B) is preferably at least one metal selected from titanium, zirconium, vanadium, chromium, molybdenum, copper, zinc, cadmium, aluminum,

gallium, and tin. Doping elements D substitute for a portion of the transition metal which defines the structure of the material (Col 1 lines 35-67).

Biensan et al do not specifically disclose the average particle diameter of the positive active material. However Narouka et al. disclose a positive active material for non aqueous electrolyte secondary battery (title) wherein, The positive active material preferably has a mean particle diameter D_{50} of from 4 μm to 25 μm and a BET specific surface area of from 0.2 to 1.5 m^2/g (Paragraph 0026). Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the same particle size of Narouka et al. for the particle size of the positive electrode active material of Biensan et al. because Narouka et al. teach that by using a lithium-nickel composite oxide having a mean particle diameter D_{50} of from 4 μm to 25 μm as a positive active material, the capacity density can be kept high (Paragraph 0023).

With respect to the preparation of the positive active material, Biensan et al teach that the present invention also provides a process for the production of an electrochemically active material for use in an electrode of a rechargeable lithium cell. The process comprises the following steps: forming a mixture comprising at least one lithium compound and at least one oxygen-containing compound of at least one transition metal M and of an element A selected from magnesium and calcium; grinding the mixture, then heat treating it in an oxidizing atmosphere, for example in air or oxygen (Col 2 lines 14-25).

With respect to cobalt raw material, Biensan et al teach that the process comprises the following steps: forming a mixture comprising at least one lithium

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compound and at least one oxygen-containing compound of at least one transition metal M (cobalt). Biensan et al. teach that preferably, said oxygen containing compound is selected from an oxide, a hydroxide, an oxyhydroxide and mixtures thereof (Col 2 lines 27-30).

With respect to lithium carbonate, Biensan et al teach that, the lithium compound is preferably selected from lithium hydroxide, lithium carbonate, lithium nitrate, lithium oxide, and mixtures thereof (Col 2 lines 27-30).

With respect to the particles being formed by coagulation of 10 or more primary particles, Biensan et al. as modified by Narouka et al. do not specifically teach particle coagulation. However, it is the position of the examiner that such properties are inherent, given that Biensan et al. as modified by Narouka et al. and the present application utilize the same electrode active material comprising the same elements of the same particle size. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

With respect to Applicant's claimed heat treatment range. Applicant's specification teaches that "A mixture of these source materials, preferably a mixture of at least one selected from an oxide containing the element A or B and a hydroxide containing the element A or B, lithium fluoride, cobalt hydroxide, cobalt oxyhydroxide or cobalt oxide, and lithium carbonate is fired in an oxygen-containing atmosphere at 600 to 1050 °C, preferably at 850 to 1000 °C. for preferably 4 to 48 hours, more preferably for 8 to 20 hours to convert to a composite oxide" (Paragraph 0048).

Biensan et al. teach that the heat treatment is preferably carried out at a temperature in the range 600 °C to 750 °C for a period in the range 2 hours to 20 hours. Biensan et al. do not specifically teach a heat treatment temperature in the range as claimed by Applicant. However, it would have been within one of ordinary skill in the art to adjust the heat treatment temperature of Biensan et al. to be within Applicant's claimed heat treatment range since there is no showing of unexpected results or showing of criticality of the heat treatment range as claimed by the Applicant in contrast to the heat treatment range disclosed by Biensan et al.

Response to Arguments

7. Applicant's arguments filed on April 25th, 2008 have been fully considered but they are not persuasive.

Applicant's principal arguments are

(a) On the other hand, in Biensan, the range of $(z + m)$ corresponds to $(c + d)$ in claim 1 of the present application. It is apparent that Biensan can only anticipate $0.05 \leq (z+m) \leq 0.2$. Biensan does not expressly or inherently teach $0.002 \leq (c+d) \leq 0.02$ as now recited in claims 1 and 10 in the present application. In view of the rejections, the Declaration under Rule 132 has been filed to show evidence of probative value including evidence of unexpected results.

(b) In the Action, it was indicated that Biensan et al. taught that the heat treatment is preferably carried out at a temperature in the range of 600 C° to 750 C° for a period in the range of 2 hours to 20 hours, and it would have been within one of ordinary skill in the art to adjust the heat treatment temperature of Biensan et al. to be within applicant's claimed heat treatment range since there is no showing of unexpected results or showing of criticality of the heat treatment range as claimed by the applicant in contrast to the heat treatment range disclosed by Biensan et al. In response to the rejections under 35 U.S.C. 103(a), claim 9 has been amended to further add limitations to c+d, and the Declaration under Rule 132, as explained before, has been filed to show evidence of probative value including evidence of unexpected results. As explained above, as shown in the table in the Declaration, it is shown that the positive electrode material in the present application does not have any diffraction peaks at $28 \pm 1^\circ$; and had a high discharge capacity and an excellent battery property, while the positive electrode material in Biensan et al. has a diffraction peak at $28 \pm 1^\circ$; a low discharge capacity; and a poor battery property.

In response to Applicant's arguments, please consider the following comments.

(a) and (b) The Declaration under 37 CFR 1.132 filed March 25th, 2008 is insufficient to overcome the rejection of claims 1-3 and 8-10 based upon the teachings of Biensan et

al. (U.S. Patent No. 6,071,645) as set forth in the last Office action because:

Applicants' experimental data are not commensurate in scope with Applicants' claims.

Applicants experiments should compare endpoints of newly claimed range at values immediately adjacent to the endpoints of the newly claimed range.

Examiner also notes that the claimed range of Biensan et al. $0 \leq z \leq 0.3$; $0 < m \leq 0.3$ reads on Applicant's claimed range of $0.002 \leq (c+d) \leq 0.02$; since z and m can be of values less than 0.02 and Applicant has not presented sufficient evidence of a showing of unexpected results for $0.002 \leq (c+d) \leq 0.02$.

Biensan et al. do not disclose any X-ray diffraction data. However, it is the position of the examiner that such properties are inherent, given that Beinsan et al and the present application utilize the same electrode active material comprising the same elements. A reference which is silent about a claimed invention's features is inherently anticipatory if the missing feature is necessarily present in that which is described in the reference. In re Robertson, 49 USPQ2d 1949 (1999).

Biensan et al. do not specifically teach a heat treatment temperature in the range as claimed by Applicant. However, it would have been within one of ordinary skill in the art to adjust the heat treatment temperature of Beinsan et al. to be within Applicant's claimed heat treatment range since there is no showing of unexpected results or showing of criticality of the heat treatment range as claimed by the Applicant in contrast to the heat treatment range disclosed by Beinsan et al.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ben Lewis whose telephone number is 571-272-6481. The examiner can normally be reached on 8:30am - 5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ben Lewis/
Examiner, Art Unit 1795

/PATRICK RYAN/
Supervisory Patent Examiner, Art Unit 1795